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Operations and Services
Hydrologic Services Program, NWSPD 10-9

DEFINITIONS AND GENERAL TERMINOLOGY

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SUMMARY OF REVISIONS: This directive supersedes NWS Manual 10-950, dated September 26, 2002. The following revisions were made to this manual:

1) Revises the definition of a flash flood.
2) Makes very minor refinements to wording used in the flood category definitions – none of which change the meaning or intent of the definitions.
3) Deletes the words "or inconvenience" from the definition of minor flooding.
4) Adds an example showing the relationship between stages and flood categories.
5) Adds a sentence to the flood stage definition highlighting the linkage between flood stage and warning issuance.
6) Adds a definition for gage datum.

(Signed) April 12, 2006

Dennis H. McCarthy Date
Director, Office of Climate,
Water, and Weather Services

Definitions and General Terminology

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1. Introduction. This directive provides official definitions of key policy-related terminology used in the Hydrologic Services Program.

2. Definitions.

Action Stage - the stage which, when reached by a rising stream, represents the level where the NWS or a partner/user needs to take some type of mitigation action in preparation for possible significant hydrologic activity. The appropriate action is usually defined in a weather forecast office (WFO) hydrologic services manual. Action stage can be the same as forecast issuance stage (see *forecast issuance stage*).

Alert Stage - the stage which, when reached by a rising stream, represents the level where appropriate officials (e.g., county sheriff, civil defense officials, or bypass gate operators) are notified of the threat of possible flooding. (Used if different from action stage, and at the discretion of the WFO or river forecast center [RFC].) The term "alert stage" is to be used instead of warning stage. Monitor stage or caution stage may be used instead of alert stage in some parts of the country.

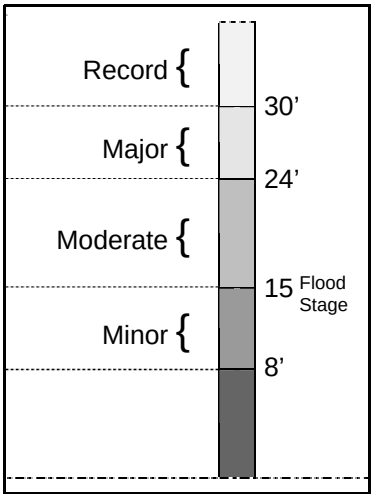
Bankfull Stage - an established gage height at a given location along a river or stream, above which a rise in water surface will cause the river or stream to overflow the lowest natural stream bank somewhere in the corresponding reach. The term "lowest bank" is however, not intended to apply to an unusually low place or a break in the natural bank through which the water inundates a small area. Bankfull stage is not necessarily the same as flood stage.

Data Point – in the context of hydrologic observations, a location on a river/stream for which observed data is input to RFC or WFO hydrologic forecast procedures, or included in public hydrologic products. Flood forecasts and warnings are not issued for data points (see *forecast point*).

Flash Flood - a rapid and extreme flow of high water into a normally dry area, or a rapid water level rise in a stream or creek above a predetermined flood level, beginning within six hours of the causative event (e.g., intense rainfall, dam failure, ice jam). However, the actual time threshold may vary in different parts of the country. Ongoing flooding can intensify to flash flooding in cases where intense rainfall results in a rapid surge of rising flood waters.

Flood - any high flow, overflow, or inundation by water which causes or threatens damage.

Flood Categories – terms defined for each forecast point which describe or categorize the severity of flood impacts in the corresponding river/stream reach. Each flood category is bounded by an upper and lower stage (see Example 1). The severity of flooding at a given stage is not necessarily the same at all locations along a river reach due to varying channel/bank characteristics or presence of levees on portions of the reach. Therefore, the upper and lower stages for a given flood category are usually associated with water levels corresponding to the most significant flood impacts somewhere in the reach. The flood categories used in the NWS are:



Example 1. *Stage - flood category relationship.*

Minor Flooding - minimal or no property damage, but possibly some public threat.

Moderate Flooding - some inundation of structures and roads near stream. Some evacuations of people and/or transfer of property to higher elevations.

Major Flooding - extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations.

Record Flooding - flooding which equals or exceeds the highest stage or discharge at a given site during the period of record keeping.

Note: all three of the lower flood categories (minor, moderate, major) do not necessarily exist for a given forecast point. For example, at the level where a river reaches flood stage, it may be considered moderate flooding. However, at least one of these three flood categories must start at flood stage.

Flood Stage - an established gage height for a given location above which a rise in water surface level begins to create a hazard to lives, property, or commerce. The issuance of flood (or in some cases flash flood) warnings is linked to flood stage. Not necessarily the same as bankfull stage.

Forecast Issuance Stage - the stage which, when reached by a rising stream, represents the level where RFCs need to begin issuing forecasts for a non-routine (flood-only) forecast point. This stage is coordinated between WFO and RFC personnel and is not necessarily the same as action or alert stage. The needs of WFO/RFC partners and other users are considered in determining this stage.

Forecast Point - a location along a river or stream for which hydrologic forecast and warning services are provided by a WFO. The observed/forecast stage or discharge for a given forecast point can be assumed to represent conditions in a given reach (see *reach*).

Gage Datum - a horizontal surface used as a zero point for measurement of stage or gage height. This surface usually is located slightly below the lowest point of the stream bottom such that the gage height is usually slightly greater than the maximum depth of water. Because the gage datum is not an actual physical object, the datum is usually defined by specifying the elevations of permanent reference marks such as bridge abutments and survey monuments, and the gage is set to agree with the reference marks. Gage datum is a local datum that is maintained independently of any national geodetic datum. However, if the elevation of the gage datum relative to the national datum (North American Vertical Datum of 1988 or National Geodetic Vertical Datum of 1929) has been determined, then the gage readings can be converted to elevations above the national datum by adding the elevation of the gage datum to the gage reading.

Hydrometeorology - an interdisciplinary science involving the study and analysis of the interrelationships between the atmospheric and land phases of water as it moves through the hydrologic cycle.

Monitor Stage - see *alert stage*.

Reach - a section of river or stream between an upstream and downstream location, for which the stage or flow measured at a point somewhere along the section (e.g., gaging station or forecast point) is representative of conditions in that section of river or stream.

Stage - the level of the water surface of a river or stream above an established datum at a given location.